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## Managing the AIDS Crisis in South Africa: Ways for the Modern Company to Continue Creating Value in a Crisis Environment



**Managing the AIDS Crisis in South Africa: Ways for the  
Modern Company to Continue Creating Value in a  
Crisis Environment**

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<b>Section</b>	<b>Page</b>
I. Introduction .....	3
II. Background Information.....	4-6
i. Visible Effects.....	4-5
ii. Non-visible Effects.....	6
iii. Treatment.....	6-7
iv. Prevention.....	8
III. Research Project.....	8-9
IV. Individual Research.....	9-11
V. Research Literature.....	11-13
VI. Chief Conclusions.....	14-17
i. Sensitivity of Model.....	14-15
ii. Importance of Skilled Workers.....	16-17
VII. Areas for Potential Improvement.....	17-19
i. Skilled versus Unskilled Workers.....	17-18
ii. Growth Rate of Pharmaceutical Costs.....	18-19
VIII. Areas for Further Research.....	19-22
i. Target Markets.....	19-20
ii. Potential Need for a Consultant.....	20-21
iii. Competition and Tax Code.....	22
IX. Summary.....	22-23
X. Endnotes.....	24
XI. Bibliography.....	25-26
XII. Appendix.....	27-28

## **I. Introduction**

The AIDS epidemic has ravaged Africa's cultural landscape in various ways since it first emerged as one of the deadliest viruses this generation has seen. Aside from breaking down the traditional family structure and creating enormous healthcare costs for individuals, it has also had a salient effect on businesses in Africa. In the past, companies claimed that they could not be held responsible for providing aid with regards to this crisis, citing it as a problem to be dealt with by the government or by those individuals infected with the virus. Recently, however, many companies have begun to analyze the benefits of providing healthcare to employees, as they begin to face some of the crippling costs associated with the disease. While it may be difficult to convince all companies to provide care based on moral standards, economic considerations are far more difficult to dismiss. Therefore, it seems beneficial to approach the problem with a profit maximization focus. This paper aims to study the feasibility of using a computer system that utilizes statistical models, neural networks and fuzzy logic to assist companies with their AIDS programs. Furthermore, it will analyze how to market this product. First, some important background information about the AIDS crisis will be provided, focusing on its effects on African businesses. This will be followed by a description of the overall research project, followed by a more detailed account of the actual research. Finally, the prime conclusions will be presented in addition to suggestions for future improvements and research.

### **Background Information**

The AIDS crisis can affect a business in various ways. From a profit enhancing focus, the costs suffered by the company as a result of an HIV infected workforce should determine

the level of aid the company ultimately provides. A company should be willing to pay for an AIDS program such that the costs of the program are less than or equal to the benefits achieved through use of the program. Although it can be difficult to quantify all of the effects, it is helpful to discuss them. For the purposes of this paper, the effects have been divided into those that are visible and those that are non-visible. Another issue companies must consider once they have decided to implement an AIDS program is exactly what the program should entail. While some companies choose prevention, others rely on treatment as the most effective way to decrease the escalating costs of this epidemic.

### **II.i. Visible Effects**

First, AIDS affects the actual workforce. Not only are astonishing rates of people dying from AIDS related diseases, but numerous workers are also forced to take many sick days. Once HIV positive employees progress to AIDS, they take roughly 30-35 more sick days per year than a healthy employee. Furthermore, during the last year of their lives, employees with AIDS are often put on lighter duty.<sup>I</sup> Productivity is lost not only from the missing worker but also from healthy employees who have to make up for the sick employee's absence. The costs of absenteeism at work are estimated in the first graph in Exhibit One. As depicted, absenteeism has cost businesses millions of Rand, and is projected to continue its steep climb until around 2010, at which point it will continue to grow at a decreased rate. With roughly 20% of the population in South Africa infected with HIV,<sup>II</sup> it seems logical that a large percentage of the workforce will continue to spend significant portions of time absent from work. Absenteeism has a negative

effect on production in two major ways. First, a smaller labor force means less employees contributing to production in the short-term. It also means, however, that the cost of training employees will be higher. According to Aventin and Huard “transmission of skills and learning of tacit knowledge would be greatly facilitated if skilled HIV-infected employees could remain in their posts longer and in better conditions.”<sup>III</sup> Due to the sudden loss of workers who are sick from AIDS, healthy employees must not only pick up the extra work, but must also take extra time out of their schedules to train replacement workers. The second graph in Exhibit One estimates the costs of training and recruitment. Compared to the first graph, the steep incline occurs 4-5 years later. The true burden of training and recruitment lags behind absenteeism costs; therefore, it is a long-term effect with which businesses will have to cope. A reduction in productivity can be expected to follow these shifts as companies go through periods with sick and unproductive employees, followed by periods with new employees who have yet to achieve full productivity.<sup>IV</sup> In addition to increased absenteeism, high training and recruitment costs and decreased productivity, another visible cost is the pension paid for family members and employees as well as death benefits. These tend to be roughly 3.5 times a worker’s salary.<sup>V</sup> Thus, they are another hefty cost companies can expect to pay upon an employee’s death.

## **II.ii. Non-visible Effects**

While the visible effects are apparent to management, there are other effects on the workplace that are far more difficult to track and monitor.<sup>VI</sup> These changes involve

a shift in the company's organization and operational structure.<sup>VII</sup> As employee absenteeism rises and healthy employees are forced to take on extra responsibility, employee morale decreases and the definitions typically used to describe each position's responsibilities become skewed. The constant fluctuation of employees leads to confusion regarding the company's organization. Furthermore, the shifting of extra responsibility to healthy employees can cause these employees to resent the organization for failing to properly address the issue, thereby allowing it to have a negative effect on those healthy employees who remain with the company. This can lead to disloyalty and alienate these employees.<sup>VIII</sup> While these effects are nearly impossible to quantify, unlike a decrease in labor force and reduction in productivity, they nonetheless have a very strong effect on the workplace over time. Due to the fact that these are intangible costs, they cannot be included in the financial model. They should, however, be included in discussions of the costs of the AIDS crisis and should be considered by companies who are committed to eliminating the costs associated with the virus.

### **II.iii. Treatment**

Many companies have been quick to adopt various methods of treatment, such as providing employees with easy access to affordable or free anti-retroviral drugs, which are typically too expensive for Africans living with the virus. Anglo American, a large mining conglomerate in South Africa, was one of the first companies to establish a healthcare program, offering to subsidize 90% of the cost of anti-retroviral drugs for each employee affected as well as one legal spouse.<sup>IX</sup>



Coca-Cola is another good example of a company with operations in Africa that is taking a proactive approach towards the problem. They provide free, confidential testing for employees as well as inexpensive drugs. Furthermore, they have started the Coca-Cola AIDS foundation, which will work in conjunction with UNAIDS towards treating various people living with the virus.<sup>x</sup> Treatment has proven to be an extremely cost-effective way of curbing some of the short-term, negative side effects of the epidemic. It significantly decreases absenteeism at work and prolongs the average employee life span. Thus, training costs are seriously reduced as employees are able to remain at their jobs for longer periods of time and assist in training new hires. Furthermore, it promotes high employee morale and creates a strong bond between the infected worker and the company. In fact, some insist it encourages workers to perform even better on the job, as being discharged would mean losing the health benefits associated with the position. Yet, the high costs of antiretroviral drugs have made some companies refuse to provide them for employees. Furthermore, the timing of offering drugs to employees is a critical issue. Companies want to be sure to provide drugs only when the virus has begun to affect productivity. Consequently, implementation can be costly if not done properly.

#### **II.iv. Prevention**

Despite the vast benefits of treatment, it is important to recognize it as an appropriate short-term solution to a long-term problem. While it is incredibly useful to treat employees who are currently infected with the virus, companies have

also started offering education programs to help prevent further infection among its healthy employees. Clearly, companies can severely reduce future costs by retaining a solid base of healthy employees. Therefore, it is helpful for companies to develop a two-pronged approach towards this epidemic: treatment and long with containment through education. Brain Warmuth, head of the South African Chamber of Business HIV/AIDS program has noted, “companies are realizing that to invest money into managing the HIV/AIDS pandemic will be cheaper than addressing the aftermath of AIDS.”<sup>XI</sup> Since companies have already seen some of the devastating effects the virus has had on their current labor force, they should be willing to spend money on programs that would educate the remainder of their workforce and secure a large amount of skilled and trained workers for the future.

## **II. Research Project**

This particular research project is unique in that it is actually a smaller portion of a larger research project. Thus, in order to provide a lucid explanation of the research, it is necessary to first explain the project in its entirety. The project’s final aim is to market a computer system to businesses in Africa that would assist them in maintaining better managed AIDS programs. Companies in remote areas could take advantage of the advanced medical care available in metropolitan areas at a fraction of the cost by using the computer program. Nurses and other onsite medical staff would be responsible for placing an employee’s medical information into the computer program. This information would then be sent to doctors located in the nearby urban region who could recommend appropriate treatment or medication. Therefore, companies benefit from the knowledge of

a highly trained, experienced doctor without suffering the staggering costs of having one onsite at all times. This program is not devoid of all costs, however. The software itself must be purchased. Additionally, companies must prepare appropriately by hiring the proper medical staff to achieve the maximum potential of the software. In order to market this product, further information regarding this market and its needs is essential. To help determine the feasibility of this product, a financial model has been created that is driven by various inputs and assumptions and calculates the cost or benefit of using the computer program. The inputs include the visible costs of AIDS, the benefits of using the computer program and the costs of implementing the program. While one number can easily define certain inputs, such as a worker's salary, other inputs are more ambiguous, such as productivity loss. These inputs are entered into the program as a range, with a low number, high number and base figure. The model then uses Monte Carlo simulation to run through all of the possible scenarios.

#### **IV. Individual Research**

My individual research has dealt with the refinement of the assumptions upon which the model relies. The ultimate goal of the project is to prove that it is in a company's best interest, financially, to purchase our computer software and implement an AIDS program that utilizes both prevention and treatment. In order to do this, the project intends to use a financial model to prove that the benefits of using the software outweigh the costs. The model is a pivotal part of the research project. It is very important that the assumptions in the model are based on accurate and reliable information. Hence, the main goal of my individual research was to eliminate as much uncertainty as possible from the assumptions

by gaining more factual information and decreasing the range of possible outcomes assigned to the inputs. The more accurate the assumptions, the more accurate the model will be. The model was built prior to the beginning of my individual research. The inputs were given as very broad ranges based on some preliminary research. However, it was important that these ranges were decreased. Before beginning my research, I ran the model based on the broad assumptions. This produced a “tornado chart,” which is a chart that displays the model’s sensitivity to each assumption. The chart lists each assumption in order, beginning with the assumption that has the greatest effect on the model and ending with the assumption that has the least effect on the model (see Exhibit Two). This was incredibly useful as it allowed me to pinpoint the assumptions that were most important to improving the model. I researched the top five to six assumptions, put my research into the model, ran the model again to create a new tornado chart and repeated the process. As more research was placed in the model, the model’s sensitivity to the assumptions decreased. See Exhibit Three for a copy of the most recent sensitivity chart. Something important to note is that certain inputs still have a very large effect on the model, such as the growth rate of pharmaceutical costs. This can be the result of several factors. First, despite constant research, I could not find reliable information for each input in the model and was unable to decrease the margin between the high number and the low number for certain assumptions. Secondly, some numbers do not fit neatly into the model and may require further modification. For a more detailed explanation, please see Section VI: Areas for Potential Improvements.

A particularly interesting part of my research stemmed from the fact that some of the information necessary to fine-tune the model was very difficult to find. Due to the

span of the topic, I was able to locate a wealth of research that provided interesting information on current breakthroughs in Africa, in addition to descriptions of assorted methods other companies have employed to help combat the costs that result from AIDS and the successes and failures each has had. As a result, although my goal was to research specific topics, I often found articles or papers on related issues that still had relevance to the model or project. Therefore, my research also provided me with information and ideas regarding sections for further improvement within the model as well as topics for further research. Both issues will be discussed following a synopsis of the primary findings.

## **V. Research Literature**

Although interesting, this topic does prove to be somewhat difficult in terms of available research. The key problem is that most African governments do not maintain accurate records. And, if they do, it is incredibly difficult to access them. Fortunately, several countries, such as South Africa and Botswana, who suffer from two of the highest rates of HIV infection, have been keeping appropriate records in recent years. Thus, due to the relative newness of this crisis, most pertinent literature can be found on the Internet. More notably, African companies are a good source for finding case studies that examine the effect of different AIDS programs on the workforce and productivity. In addition to companies, many non-profit organizations have been created as a reaction to the devastating consequences of the virus. These organizations have also produced important studies of the virus's effect on African companies and the workforce. Additionally, for very current information regarding antiretroviral drug prices or government policy information, I was able to find assorted articles online. However, there were several case

studies upon which I based a great deal of my research conclusions. Below are brief descriptions of each case study.

**V.i. “The Cost of HIV/AIDS to Businesses in South Africa”**

This paper was written by the Center for International Health and Development in conjunction with Boston University and the University of California, San Diego. In order to determine the costs that businesses suffer due to AIDS, researchers compiled data from six different companies and analyzed the results. This was a useful paper particularly because all six companies located in South Africa and Botswana, which are the areas we intend to market our product. Due to the demographic differences that exist across different African countries, research from a company in another country may not accurately reflect the situation in our target market. Thus, information regarding companies in other countries is less beneficial to the model. The companies are in the utility sector, mining and the media. They provided a large range of numbers for each input.

**V.ii. “Care and Treatment to Extend the Working Lives of HIV-Positive Employees: Calculating the Benefits to Business**

This study was released by the Harvard Institute for International Development. Unlike the first study, this study did not provide a set of numbers for several different companies. Rather, it analyzed overall trends, citing different facts from various companies. This study used calculations and formulas to derive a great deal of its information. Finally, using these calculations, the researchers examined

the total savings to a company that resulted from treating employees based on three scenarios: life expectancy is extended by one year, three years or five years.

### **V.iii. “Executive Summary of the HIV/AIDS Study for BP”**

This study was commissioned by BP, a South African petroleum company, to gain a better understanding of the effect AIDS was having on its operations. The paper examines each of the costs individually and then looks at the actual values of these costs for the next fourteen years under four scenarios. The four scenarios are that BP does not intervene, BP intervenes mildly without using antiretroviral drugs, BP intervenes mildly but does distribute antiretroviral drugs and, finally, BP engages in strong intervention. In addition to using company data, the author also used demographic data from antenatal clinics in the surrounding area.

### **V.iv. “The Economic Impact of HIV/AIDS in Southern Africa”**

This study was done by The Brookings Institution in Washington, D.C. This report begins by analyzing how some companies initially responded to the crisis when it was first recognized as something important. Ultimately, however, the study analyzes what is commonly referred to as the “AIDS tax” on businesses in Africa. This is the extra cost that companies suffer as a result of having an AIDS infected workforce. The study examined the costs of three different companies, all located in either South Africa or Botswana. The three companies are in the Heavy Industry, Agriculture and Mineral sectors. The study then provided a detailed analysis of Debswana, a large diamond mining company in South Africa. The

analysis not only examined the costs suffered by Debswana, it examined the evolution of the company's policies towards AIDS and its employees.

## **VI. Chief Conclusions**

At the outset of the program, my goal was to determine whether it would be feasible to market this program to companies in Africa. Due to the scope of this topic, however, I am unable to successfully answer that question with certainty. Nonetheless, the research I have completed has definitely improved the model. More importantly, despite changes in the model and improvements in assumptions, the model still indicates that use of the computer program would bring about positive cash flows. Although further research is necessary, this particular research has helped to reinforce the idea that this project still lies within the realm of possibility. Aside from confirming that this project still has potential for success, my research has provided me with some other conclusions regarding the model and the marketing of this product.

### **IV.i. Sensitivity of Model**

One key discovery from my research was that certain important assumptions change drastically depending on the industry being analyzed. Due to the model's sensitivity to shifts in these numbers, a change in industry can have an important effect on the model's outcome. One example is the real discount rate. Currently, the model uses an average of the discount rates used by various South African companies in their own studies. This number, however, is very vulnerable to a change in industry or sector. The study itself provides a good example of the



variance that exists between different industries. One company in the mineral industry used a discount rate of 4.5% while another company in the agriculture industry claimed a discount rate equal to 10%.<sup>xii</sup> Another variable that is sensitive to a change in industry is the infection rate. In certain industries worker conditions have exacerbated the problem. In the mining industry, for example, workers live in community barracks, away from their families, and often take advantage of the nearby sex trade. The prevalence of HIV positive commercial sex workers, commonly referred to as CSWs, in large mining communities has helped to create a breeding ground for the spread of this disease.<sup>xiii</sup> Thus, these conditions have led to exceptionally high infection rates, with some mining companies recording rates as high as 38%-39%.<sup>xiv</sup> Although these are only two examples of the changes that occur as a result of changing the industry being studied, they help to illustrate the importance of changing some assumptions with respect to industry. This is particularly important when analyzing which industries to target. Using a country-wide or province average infection rate that lies above the infection rate for an industry or company may result in overly optimistic results. As the project progresses, it may be useful to create different versions of the model, each based on different industries. This would be helpful on two levels. First, the industry specific information could be used in deciding which industries or companies to target as potential customers. More accurate assumptions based on industries would provide better information regarding which sectors suffer the highest costs as a result of AIDS and, thus would be willing to invest in managing those costs.

Furthermore, it could then be used to market the program to companies in those industries that are designated as being a part of the target market.

#### **IV.ii. Importance of Skilled Workers**

Overwhelming evidence suggests that there are numerous costs associated with an AIDS infected workforce. Due to the high prices of antiretroviral drugs, however, the benefits of treating the workforce may not exceed the costs. This is particularly the case with regards to companies that employ a large number of unskilled employees and have a large base of people from which to pull new employees. These companies have very low training and recruitment costs and do not have to worry about severely depressed levels of productivity after a worker enters the final phase of the virus due to the fact that their employees are easily replaceable. But this is not the case for companies that rely on skilled labor. The costs of training are significantly higher for these companies. They suffer productivity losses from the lost employee, the time a healthy employee must spend training new hires, and the time it takes the new hire to fully understand their job and achieve full productivity. Hence, antiretroviral treatment can be very beneficial to companies that employ high levels of skilled workers, despite astronomical drug prices. This is largely due to the fact that costs associated with an AIDS infected workforce are substantially higher for skilled workers. In a recent study, costs associated with skilled workers were roughly 317%-333% those of their unskilled counterparts.<sup>xv</sup> Consequently, it seems logical that companies with many skilled workers should be

willing to invest in treatment programs. Furthermore, some studies show that poorly managed treatment programs end up doing more harm than good, as timing of medication is critical. Employees that take antiretroviral drugs at the incorrect stage of the virus are actually examples of cost doubling: the cost of the treatment along with the cost to the company from past loss in productivity.<sup>xvi</sup> The computer software would help companies manage their treatment programs at a low cost. Therefore, when marketing this product, it would most likely be best to target companies with a large percentage of skilled employees.

## **VII. Areas for Potential Improvement**

Although my research has already led to some improvements with regards to the model, there are several areas of the model that leave room for further improvement and refinement. It is important to note, though, that when the model was initially put together it was intended to be a work in progress. As a result, it is constantly progressing with continued research and data. Below, I have outlined several larger issues that should be considered; however, this is not intended as an exhaustive list. Due to the ambiguity of several of the inputs in the model, it would have been impossible to create a model that anticipated all of the facts we have learned through research. Fortunately, the model was constructed with the intention that it would be altered.

### **VII.i. Skilled vs. Unskilled Workers**

As mentioned previously, one of the primary findings of my research was the importance of a viable AIDS program for businesses with a large percentage of

skilled workers. The model, however, fails to make a distinction between workers with differing skill levels. The model currently records different figures for salaries and for pension cost in termination year, which is derived as a multiple of salary. However, it fails to distinguish between many other important costs. For example, as previously discussed, the costs of recruiting and training a new hire to fill the position of a skilled employee are very expensive. Furthermore, the cost of a sick day taken by a skilled employee may be greater. If the skilled employee was a supervisor or manager, his/her absence may affect many different workers. Finally, companies may notice different infection rates among skilled workers, as opposed to those among non-skilled workers.<sup>xvii</sup> By using a model with different figures for skilled and unskilled workers, one could accurately demonstrate the sharp increase in costs realized for skilled employees, indicating that the program would be perfect for businesses with high levels of skilled employees.

#### **VII.ii. Growth Rate of Pharmaceutical Costs**

A hugely debated issue right now regarding the AIDS crisis is the incredibly high cost of antiretroviral drugs. With prices the same in Africa as for most developed countries, few families can afford to buy these lifesaving medications. Countries such as Brazil, however, provide an example of ways to avoid this problem. There, generic versions of popular antiretroviral drugs are sold at a small fraction of the cost of their name-brand counterparts. As of September 2002, 63% of antiretroviral drugs sold in Brazil were generic copies and overall prices had decreased by 82% since 1997.<sup>xviii</sup> Africa expects to see drastic changes in this

particular field, as several large pharmaceutical companies have already agreed to begin providing drugs at prices equal to the cost of production. The model currently accounts for antiretroviral drugs with two inputs: current price of antiretroviral drugs and expected growth in prices of these drugs. However, this methodology does not accurately reflect the current situation. It is likely that prices will experience a sharp decrease, until they reach cost, at which point they should grow with inflation.

### **VIII. Areas for Further Research**

Due to the scope of this specific research topic, it requires further work and analysis. There are several topics that I have come across during the course of my research that did not necessarily fit in with my research at the time but are certainly important factors to discuss and will have an impact on the project overall. Due to the fact that the project intends to market a product to companies in Africa, there are many other topics that must be considered besides cost and benefit analysis.

#### **VIII.i. Target Markets**

As mentioned throughout this paper, a key determinant of this program's success is the amount of laborers employed that are skilled, as opposed to completely unskilled. Prior to marketing this product to companies, it is important to recognize which industries could be considered target markets and, specifically, which companies may be considered target companies. After discussing this issue with the research team, we felt it would be helpful to create a matrix in which different

industries would be judged based on two main criteria. Those two criteria are the use of skilled workers and the availability of replacement workers, or, a labor pool. Companies that employ a large percentage of skilled workers and have a very limited labor pool from which to hire new employees are target companies and would be denoted as such. Companies that employ a large percentage of skilled workers but do not necessarily have a small labor pool would still be denoted as potential target companies but are not as desirable as the previous group. This is for several reasons. As illustrated in previous sections, the training costs for a skilled worker are much higher than those for an unskilled worker. However, the size of the labor pool is important as well. If companies are able to easily recruit and train new employees, they have a slightly decreased incentive to treat sick employees that currently work for them, despite burgeoning training costs. Companies with a very limited labor pool, however, have an added incentive to provide employees with antiretroviral drugs that will extend their life spans. Putting together a matrix and designated target industries or companies would be an incredibly important step prior to developing a marketing strategy. Furthermore, it could provide added guidance for developing different versions of the model that are designed to apply to specific industrial sectors or companies.

#### **VIII.ii. Potential Need for Consultant**

Regardless of some companies' desires to provide employees with an AIDS program, they are unsuccessful due to the negative social consequences associated with being diagnosed as HIV positive. Many employees opt not to participate in

and AIDS program even though it would make them and their families eligible for life-saving drugs at no personal cost. Furthermore, some employees refuse to be tested for HIV in the first place, as they would rather be ignorant of their situation than face the consequences of knowing they are, in fact, HIV positive. Some companies have turned to consultants for help. Image consultants have had some success altering the stereotypes that are found in many workplaces. Using an image consultant would be an added cost in addition to the cost of the program. The benefits of that service, however, may very well outweigh the costs. At present, the model assumes that only 25% of employees volunteer themselves for free HIV testing and utilize the program. Even with this incredibly low number, the company stands to make a profit by treating its employees. Therefore, if the use of a consultant could increase that number substantially, it would be worth the costs of hiring one. Installing the computer program involves paying for several fixed costs, such as the program and the medical staff. Therefore, it is in a company's best interest to encourage as many employees to be tested and sign up for the program as possible, thus maximizing the use of its resources. Furthermore, if a company's goal is to eliminate the costs associated with AIDS, it will need to attract a substantial amount of employees to volunteer for participation in the program, as this will increase the number of HIV positive employees they are able to treat.

### **VIII.iii. Competition and Tax Code**

There are two more areas that should be researched further as they could potentially pose problems that would be too large for the project to overcome. The first topic is competition. Due to the prevalence of this research topic in the media recently, many other researchers have been grappling with potential ways to help alleviate some of the escalating costs. Therefore, it is important to be sure there are no similar products on their way to this market. If there are similar products we may choose to either not enter this market or differentiate ourselves either through the product or through marketing strategies. Another issue that should be addressed is the tax code. One particular article mentioned that DeBeers had encountered problems when it tried to offer free antiretroviral drugs to its employees. “One of the problems [was] that South African tax laws make the provision of free or subsidized medication to employees a taxable benefit, defeating the whole purpose of providing free drugs.”<sup>xix</sup> Another problem DeBeers had was that it risked violating the Medical Schemes Act, which forbids companies from offering services similar to those of medical aid schemes.<sup>xx</sup> It seems quite understandable that these are issues that would need to be resolved as soon as possible before further progress could be made.

### **IX. Summary**

It is rather obvious that the AIDS crisis has had a devastating effect on South Africa's economy and South African businesses. However, the appropriate way to deal with the costs of this crisis is far less obvious. As this epidemic continues to ravage the workforce,



companies have begun to recognize the benefits of providing healthcare plans to its employees. Companies should be willing to purchase fairly priced computer software that would help them to properly manage their AIDS programs, which would help to mitigate some of the staggering costs that have resulted from the spread of the virus. In order to determine the feasibility of this business plan, a financial model should relate whether the benefits of treating workers justify the costs of the program. Additionally, as the research progresses, the model should be constantly improved in order to reflect current information. Due to the increased costs of skilled workers, companies employing large amounts of skilled workers should be targeted as potential customers. Furthermore, companies with a limited labor pool are even more desirable candidates. These are some general guidelines regarding appropriate companies to target as potential customers. However, further research is necessary regarding these criteria and further adjustments to the model are necessary in order to market the product to specific companies.

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- <sup>IV</sup> POLICY Project. p. 1.
- <sup>V</sup> Rosen, Sydney, Jeffrey Vincent, William MacLeod, Matthew Fox, Donald Thea and Jonathon Simon. p. 12.
- <sup>VI</sup> Policy project p. 1.
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- <sup>XVI</sup> IRIN News Source. p.1.
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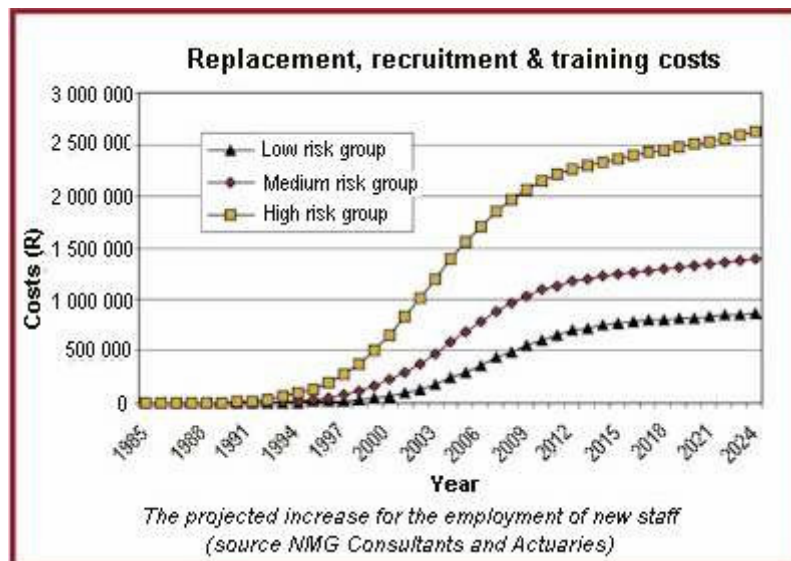
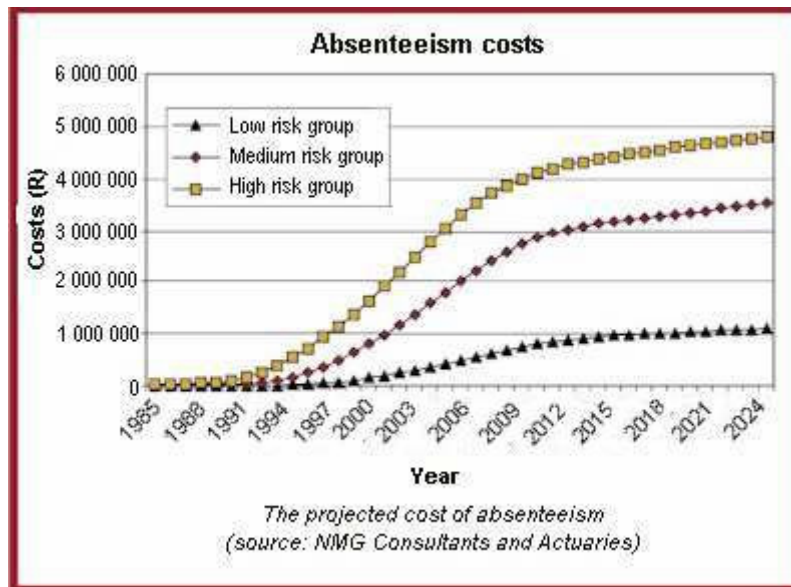
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## Exhibit One



## Exhibit Two: Most Recent Tornado Chart

